Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1-3. (Cancelled)

4. (Previously presented) A method for preparing a region of an electronic document for printing on a printing system having asymmetric misregistration behavior comprising:

defining an asymmetric transformation;

applying the asymmetric transformation to the region to generate a transformed region;

processing the transformed region to generate transformed traps;

applying an inverse transformation to the transformed traps to generate traps for the region, the inverse transformation being an inverse of the asymmetric transformation; and

using the traps generated for the region to trap the region asymmetrically to compensate for asymmetric misregistration behavior.

5. (Original) The method of claim 4, wherein the asymmetric transformation is defined as a transformation matrix and the inverse transformation is defined as a matrix inverse of the transformation matrix.

6. (Original) The method of claim 4, wherein defining the asymmetric transformation comprises:

obtaining a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

obtaining a second trap width magnitude and direction, the second trap width being a maximum trap width for the printing system;

defining a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

defining a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

7. (Original) The method of claim 6, wherein the electronic document is represented in a page description language in a user space and the traps for the region are represented in a device space, the method further comprising:

mapping the traps from device space to user space and adding the mapped traps to the page description language representation of the electronic document.

8. (Original) The method of claim 6, wherein the first trap width direction and the second trap width direction are at right angles to each other.

9. (Original) The method of claim 6, wherein defining the asymmetric transformation maps a first trap width vector and a second trap width vector to orthonormal basis vectors of a trap-engine space.

10. (Original) The method of claim 4, wherein processing the transformed region to generate transformed traps is done by a trap engine generating symmetric traps in a trap-engine space.

11. (Original) The method of claim 4, wherein the step of applying the inverse transformation maps the transformed traps from a trap-engine space to a device space.

12. (Original) The method of claim 4, wherein the electronic document is represented in a page description language in a user space and the traps for the region are represented in a device space, the method further comprising:

mapping the traps from device space to user space and adding the mapped traps to the page description language representation of the electronic document.

13. (Original) The method of claim 4, wherein:

the asymmetric transformation maps a resolution-independent representation of the region into a resolution-independent representation of the transformed region;

a vector-based trapping engine processes the transformed region to generate transformed traps represented as vectors; and

the inverse transformation maps the transformed traps represented as vectors to a device space.

14. (Original) The method of claim 13, further comprising performing peeker detection and removal in device space before applying the asymmetric transformation.

15-17. (Cancelled)

18. (Previously presented) A computer program product, tangibly stored on a computer-readable medium, for preparing a region of an electronic document for printing on a printing system having asymmetric misregistration behavior by trapping the region asymmetrically to compensate for asymmetric misregistration behavior of a printing system, comprising instructions operable to cause a computer to:

define an asymmetric transformation;

apply the asymmetric transformation to the region to generate a transformed region;

process the transformed region to generate transformed traps; and

apply an inverse transformation to the transformed traps to generate traps for the region, the inverse transformation being an inverse of the asymmetric transformation.

19. (Original) The product of claim 18, wherein the asymmetric transformation is defined as a transformation matrix and the inverse transformation is defined as a matrix inverse of the transformation matrix.

20. (Original) The product of claim 18, wherein the instructions to define the asymmetric transformation comprise instructions to:

obtain a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

obtain a second trap width magnitude and direction, the second trap width being a maximum trap width for the printing system;

define a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

define a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

21. (Original) The product of claim 20, wherein the electronic document is represented in a page description language in a user space and the traps for the region are represented in a device space, the product further comprising instructions to:

map the traps from device space to user space and add the mapped traps to the page description language representation of the electronic document.

22. (Original) The product of claim 20, wherein the first trap width direction and the second trap width direction are at right angles to each other.

23. (Original) The product of claim 20, wherein defining the asymmetric transformation maps a first trap width vector and a second trap width vector to orthonormal basis vectors of a trap-engine space.

24. (Original) The product of claim 18, wherein processing the transformed region to generate transformed traps is done by a trap engine generating symmetric traps in a trap-engine space.

25. (Original) The product of claim 18, wherein the step of applying the inverse transformation maps the transformed traps from a trap-engine space to a device space.

26. (Original) The product of claim 18, wherein the electronic document is represented in a page description language in a user space and the traps for the region are represented in a device space, the product further comprising instructions to:

map the traps from device space to user space and add the mapped traps to the page description language representation of the electronic document.

27. (Original) The product of claim 18, wherein:

the asymmetric transformation maps a resolution-independent representation of the region into a resolution-independent representation of the transformed region;

a vector-based trapping engine processes the transformed region to generate transformed traps represented as vectors; and

the inverse transformation maps the transformed traps represented as vectors to a device space.

28. (Original) The product of claim 27, further comprising performing peeker detection and removal in device space before applying the asymmetric transformation.

29-30. (Cancelled)

31. (Previously presented) A system comprising:

a printing system having asymmetric misregistration behavior;

means for defining an asymmetric transformation;

means for applying the asymmetric transformation to a region of a document to generate a transformed region;

means for processing the transformed region to generate transformed traps;

means for applying an inverse transformation to the transformed traps to generate traps for the region, the inverse transformation being an inverse of the asymmetric transformation; and

means for using the traps generated for the region to trap the region asymmetrically to compensate for the asymmetric misregistration behavior.

32-33. (Cancelled)

34. (Previously presented) The method of claim 4, wherein the printing system comprises a printing device having asymmetric resolution, and defining the asymmetric transformation comprises:

defining a device component of the asymmetric transformation based on the asymmetric resolution of the printing device.

35. (Previously presented) The method of claim 34, wherein defining the asymmetric transformation further comprises:

obtaining a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

obtaining a second trap width magnitude and direction, the second trap width being a maximum trap width for the printing system;

defining a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

defining a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

36-37. (Cancelled)

38. (Previously presented) The product of claim 18, wherein the printing system comprises a printing device having asymmetric resolution, and the instructions to define the asymmetric transformation comprise instructions to:

define a device component of the asymmetric transformation based on the asymmetric resolution of the printing device.

39. (Previously presented) The product of claim 38, wherein the instructions to define the asymmetric transformation further comprise instructions to:

obtain a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

obtain a second trap width magnitude and direction, the second trap width being a maximum trap width for the printing system;

define a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

define a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

40. (Previously presented) A computer program product, tangibly stored on a computer-readable medium, for implementing a trap engine, comprising instructions operable to cause a computer to:

implement an application programming interface operable to receive asymmetry information defining a desired asymmetry of traps; and

use the asymmetry information to calculate a perpendicular distance a trap extends from an edge with reference to an orientation of the edge on a printed page.

41. (Previously presented) The product of claim 40, wherein:

the asymmetry information comprises a minimum trap width vector and a maximum trap width vector.

42. (Previously presented) The product of claim 41, further comprising instructions operable to cause a computer to:

use a cross section of an ellipse defined by the minimum trap width vector and the maximum trap width vector, the cross section being taken through the center of the ellipse in a

direction perpendicular to the edge, to calculate the perpendicular distance the trap extends from the edge.

43. (New) A method for implementing a trap engine comprising:

implementing an application programming interface operable to receive asymmetry information defining a desired asymmetry of traps; and

using the asymmetry information to calculate a perpendicular distance a trap extends from an edge with reference to an orientation of the edge on a printed page.

44. (New) The method of claim 43, wherein:

the asymmetry information comprises a minimum trap width vector and a maximum trap width vector.

45. (New) The method of claim 44, further comprising:

using a cross section of an ellipse defined by the minimum trap width vector and the maximum trap width vector, the cross section being taken through the center of the ellipse in a direction perpendicular to the edge, to calculate the perpendicular distance the trap extends from the edge.

46. (New) The system of claim 31, wherein the asymmetric transformation is defined as a transformation matrix and the inverse transformation is defined as a matrix inverse of the transformation matrix.

47. (New) The system of claim 31, wherein the means for defining the asymmetric transformation comprises:

means for obtaining a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

means for obtaining a second trap width magnitude and direction, the second trap width

being a maximum trap width for the printing system;

means for defining a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

means for defining a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

48. (New) The system of claim 47, wherein the document is represented in a page description language in a user space and the traps for the region are represented in a device space, the system further comprising:

means for mapping the traps from device space to user space and adding the mapped traps to the page description language representation of the document.

49. (New) The system of claim 47, wherein the first trap width direction and the second trap width direction are at right angles to each other.

50. (New) The system of claim 47, wherein the means for defining an asymmetric transformation maps a first trap width vector and a second trap width vector to orthonormal basis vectors of a trap-engine space.

51. (New) The system of claim 31, wherein the means for processing the transformed region to generate transformed traps comprises a trap engine generating symmetric traps in a trap-engine space.

52. (New) The system of claim 31, wherein the means for applying the inverse transformation maps the transformed traps from a trap-engine space to a device space.

53. (New) The system of claim 31, wherein the document is represented in a page description language in a user space and the traps for the region are represented in a device space, the system further comprising:

means for mapping the traps from device space to user space and adding the mapped traps to the page description language representation of the electronic document.

54. (New) The system of claim 31, wherein:

the asymmetric transformation maps a resolution-independent representation of the region into a resolution-independent representation of the transformed region;

a vector-based trapping engine processes the transformed region to generate transformed traps represented as vectors; and

the inverse transformation maps the transformed traps represented as vectors to a device space.

55. (New) The system of claim 54, further comprising means for performing peeker detection and removal in device space before applying the asymmetric transformation.

56. (New) The system of claim 31, wherein the printing system comprises a printing device having asymmetric resolution, and the means for defining the asymmetric transformation comprises:

means for defining a device component of the asymmetric transformation based on the asymmetric resolution of the printing device.

57. (New) The system of claim 56, wherein the means for defining the asymmetric transformation further comprises:

means for obtaining a first trap width magnitude and direction, the first trap width being a minimum trap width for the printing system;

means for obtaining a second trap width magnitude and direction, the second trap width

being a maximum trap width for the printing system;

means for defining a rotational component of the asymmetric transformation by determining an angle by which a first axis of a device space has to be rotated to be aligned with the first trap width direction; and

means for defining a scaling component of the asymmetric transformation according to a ratio of the first trap width magnitude and the second trap width magnitude.

58. (New) A system for implementing a trap engine comprising:

means for implementing an application programming interface operable to receive asymmetry information defining a desired asymmetry of traps; and

means for using the asymmetry information to calculate a perpendicular distance a trap extends from an edge with reference to an orientation of the edge on a printed page.

59. (New) The system of claim 58, wherein:

the asymmetry information comprises a minimum trap width vector and a maximum trap width vector.

60. (New) The system of claim 59, further comprising:

means for using a cross section of an ellipse defined by the minimum trap width vector and the maximum trap width vector, the cross section being taken through the center of the ellipse in a direction perpendicular to the edge, to calculate the perpendicular distance the trap extends from the edge.